

Polluters on the Podium

SAMSUNG

PerG

Which sponsors of the Paris 2024 Olympics are the biggest polluters?

Top-tier Olympic sponsors' emissions in 2022



Summary

The Olympic Partner (TOP) programme is the highest level of Olympic sponsorship, granting exclusive, global marketing rights to the Olympic and Paralympic Games and Olympic teams around the world to a select group of 15 Worldwide Olympic Partners.

In this report, we compare the self-reported emissions of these top-tier sponsors, to find out which are the highest emitters of greenhouse gases (GHGs).

We find that the top three emitters are 1) the world's biggest carmaker Toyota; 2) consumer goods giant Procter & Gamble; and 3) electronics conglomerate Samsung.

We award these three companies an ironic Gold, Silver, and Bronze medal respectively, as the top "Polluters on the Podium".

We urge the International Olympic Committee (IOC) to drop polluting sponsors like these, and partner with companies genuinely driving forwards the energy transition.





Introduction

A climate-polluting cloud hangs over the 33rd Olympiad taking place in Paris. The Olympics is a rare moment where humanity's attention is held by a single global spectacle, and millions watch the world's best athletes compete for the ultimate sporting accolades. It is also a time when the world values what is meant to be the pinnacle of human achievement.

The Paris 2024 Olympics are the first to be fully aligned with the Olympic Agenda 2020, which makes a promise to deliver Games that are more responsible, sustainable and inclusive. The agenda claims to be built on the three pillars of 'credibility', 'sustainability' and 'youth', and the ideals are said to be in recognition that the world is evolving rapidly and the Olympic Movement has the opportunity to be an agent of positive change.

In that light, the International Olympic Committee (IOC) is implementing a plan meant to halve the Games-related <u>carbon footprint</u> by changing its approach to energy, food, venues, digital services and, in particular, transport. The target though would appear to exclude the emissions from fan travel that would constitute a significant part of the carbon footprint of any games. The IOC also says it is using forest planting to 'compensate' for its emissions further, but this approach to carbon reduction has been shown to be highly unreliable and not a 'like-for-like' exchange.

This report however scrutinises another oversight in the aim to green the games: the sponsors of the Paris 2024 Olympics. Specifically we look only at the top-tier worldwide sponsors of The Olympic Partner (TOP) programme, the highest tier of sponsorship.

It digs into these Olympics sponsors' sustainability reports, ranks them by self-reported emissions, and reveals the likely repercussions of granting them a global platform for their often misleading marketing messaging. Many of these companies are actively using Paris 2024 to slow down the transition to clean energy sources. This makes it more difficult for countries, companies and individuals to make choices that do not harm the environment and themselves.

The report shows that there comes a point when taking money from a dirty sponsor undermines the very goals of the Games. At a certain time in history, sporting events had to decide to stop receiving money from the tobacco industry, as this greatly conflicted with the ideals of health they promoted.

When polluting companies such as Toyota, P&G and Samsung are given free rein to masquerade as green companies, consumers can be easily deceived into continuing to support pollution. It also means these companies can use cheaper prices to undercut competitors that really are making the necessary investments in genuinely green products and technologies.

The three companies in this report, and other polluting Olympics sponsors, are utilising the same sportswashing tactics employed by harmful industries such as tobacco, gambling and alcohol giants, in order to be perceived positively by the very public they are hurting.

Climate change continues to negatively alter every aspect of life, and sport is not immune from its devastating consequences. Many track and field sports take place outside and athletes' health is constantly at risk of extreme heat, which has already led to athletes collapsing at events and suffering long-lasting effects.

For the sake of athletes, sports fans, and a livable future for all of us, the Olympics must drop megapolluting sponsors.



Methodology

This report is based on data collected from the annual sustainability reports of the worldwide partners of the Paris 2024 Olympics. As such, it relies on the data quality of these companies and their disclosure practices. We selected 2022 as the most recent year for which all companies had available annual sustainability reports to allow a fairer comparison – not all 2023 data has yet been published.

Since this data is based on self-reported emissions, it involves comparing emissions across different sectors and accounting methods; some companies purposefully disclose less than others, in order to flatter their own environmental credentials.

Preparation of this report considered the risk that comparing self-reported corporate emissions data might encourage so-called "green-hushing" by companies, if it is the case that reduced transparency and accuracy of disclosure has occurred. However, the new European Corporate Sustainability Reporting Directive mitigates this risk, as all companies with substantial operations in Europe will now be required to report their Scope 3 emissions by law. For many types of company, especially oil producers, or carmakers, Scope 3 is the largest part of their climate impact, because it includes the Use of Product that they make, e.g. the actual combustion of an oil product such as petrol/gasoline in a combustion engine vehicle.

Further consideration of whether the overall top three rankings given in this report could be materially impacted by omissions and methodology differences was assessed as low risk. The difference in emissions between the top ranked polluter, Toyota, and the other Olympics sponsors is so large that there is not an example of a recent methodology change by any of these corporations in recent years that altered its reported emissions by a size that would affect the top three rankings. The order of the lower ranking emitters, which are more clustered together in the size of their reported emissions, could be affected by a methodology change by one or more of the companies.

Overall however, we are happy to compare these company's self-reported emissions because we feel that companies that wish to gain the global media spotlight of the Olympic Games should, as a bare minimum, have completed a solid emissions reporting process that does not mislead the public.

If it transpires that any of these companies' data reporting is so low-quality that it would materially impact the lower rankings, that in itself is a scandal that should be investigated further. The entire point of corporate emissions reporting is supposed to be that it empowers investors, consumers, citizens, and other stakeholders to make informed decisions about that company.



Which are the top 3 polluters on the podium, and why are their emissions so high?

> The gold medal for polluting goes to Toyota, placing it first on the Podium of Polluters

Toyota's 2022 sustainability report indicates that the company emitted **2.4 million** tonnes of Scope 1 CO_2 emissions, **2.9 million tonnes** of Scope 2 CO_2 emissions and that it was responsible for **570.5 million tonnes** of Scope 3 CO_2 emissions. This brought the company's 2022 total emissions to **575.8 million tonnes** of CO_2 .

3

This is more than the total national emissions of all but 11 countries competing in the Games.

2

The reason Toyota's emissions are so high is because it is the world's largest producer of conventional combustion-engine vehicles, an inherently polluting industry. Road transport is the single biggest driver of oil demand, and climate scientists say to stay within safe planetary boundaries, we need to urgently phase out fossilfuel burning vehicles.

However, instead of listening to the science and phasing them out, Toyota is still increasing its production of such vehicles. It plans to add over 11 million combustion engine vehicles to the roads this year alone, each one of which will add to fossil fuel demand throughout the 15 years or so on average vehicles typically stay on the road before being scrapped.

Moreover, Toyota is accused of engaging in a variety of misleading marketing tactics to prevent consumers choosing Electric Cars. For example, in over 20 countries Toyota has been found to have marketed 100% petrol-powered cars as "Electrified" vehicles, to capitalise on public interest in EVs but without enabling a genuine switch to them. In one country covered in the global consumer group, <u>Eko's "Electrifraud" report</u>, Toyota even targeted search engine ads at people searching for "Electric Vehicles", redirecting them to its misleadingly



branded petrol vehicles instead.

The resulting global impact on emissions from Toyota persuading EV-curious drivers to choose petrol cars instead has not been quantified.

Toyota's sponsorship of the Paris Olympics event itself seems to be an important part of the company's efforts to persuade the public that petrol cars are sustainable, and there is no need to switch to EVs. It is marketing the 2,674 vehicles provided to shuttle athletes and accredited participants between events as a "100% electrified passenger vehicle fleet," even though 1,021 of these cars are hybrids that run on petrol, so are far from being fully electrified.

Of these 1,021 hybrid cars, only 176 have a plug (and even plug-in hybrids have much <u>less</u> <u>emissions reduction</u> than their makers generally claim, depending on how often they are actually plugged in).

The remaining 845 hybrids Toyota is supplying to the Games have no plug – their only energy input is at the petrol pump. While the modest efficiency gains of such vehicles are to be welcomed, the scientific and engineering reality is that 100% of their energy input comes from combusting petrol. To describe these vehicles as "100% electrified" is simply pseudoscientific nonsense, seemingly designed deliberately to confuse the public into sticking with petrol vehicles.

Meanwhile the carmaker is providing 500

Allowing Toyota to market petrolpowered cars as sustainable at this year's Games genuinely damages demand for actual zeroemission vehicles

hydrogen-powered Mirai cars to shuttle athletes and other delegates in France, even though the company has publicly acknowledged that hydrogen cars do not have a future as part of its business model, making the profile given to them misleading.

The International Committee for Fair Play was established to promote the practice of fair play principles, which are essential to sport. But with its choice of vehicles, Toyota is not demonstrating fair play principles in its sponsorship of the Paris 2024 Olympics, nor is it being truthful with its marketing campaigns, were it an athlete it might be accused of 'message doping'.

Allowing Toyota to market petrol-powered cars as sustainable at this year's Games genuinely damages demand for actual zero-emission vehicles, since climate-concerned consumers are more likely to settle for petrol-hybrid cars that have been given the Paris 2024 stamp of approval.

Toyota is spending approximately USD 835 million on its Olympics deal, making it the first car company to join the IOC's top-tier sponsorship programme – 'The Olympic Partner' (TOP) – while simultaneously breaking the record by far for any IOC sponsorship deal in the history of the Games.

This allows the company to advertise its thousandstrong fleet of hybrid vehicles, including the RAV4, Corolla TS, Yaris Cross, and Highlander, as "electrified" vehicles, a claim which appears to be a deliberate attempt to blur the distinction between a polluting petrol-hybrid car and

fully-electric vehicles.

The IOC's 'TOP' sponsorship programme gives companies exclusive worldwide marketing rights and permission to use the Olympic rings in advertising. Four-year top-tier sponsorships have usually sold for about USD 100 million and eight-year agreements for USD 200 million, meaning Toyota's sponsorship deal has quadrupled that amount.

Oil giant BP sponsored parts of the London 2012 Olympics drawing widespread criticism. But Toyota has far higher CO_2 emissions than BP – it just has much better branding to disguise the fact. It advertises and sells 11 million fossil fuel-powered vehicles per year, often using sustainability branding, even though it is an inherently carbonintensive business that needs to be phased out

Toyota is used to leading... from the back

In May this year, InfluenceMap – an independent, non-profit think tank providing objective and evidence-based analysis on how companies and financial institutions are having an impact on the climate and biodiversity crises – ranked Toyota as one of the automakers most engaged in lobbying against the global transition to electric vehicles. In its 'Automakers and Climate Policy Advocacy: A Global Analysis – how automaker lobbying threatens the global transition to electric vehicles' <u>report</u>, Toyota was highlighted as actively having advocated against policies promoting electric vehicles.

Toyota was the lowest-scoring company in this analysis, driving opposition to climate regulations promoting battery electric vehicles (BEVs) in multiple regions, including the US, Australia and the UK.

In the same month, the International Council on Clean Transportation (ICCT) released its <u>annual</u> <u>assessment</u> of progress in the transition to zeroemission vehicles (ZEVs). The ICCT analysed 21 of the world's largest automakers by volume across 10 custom designed metrics in three categories.

Automakers based in Japan, including Toyota, remained at the bottom of the ICCT's rating following the previous year's analysis, suggesting Toyota is worse than merely disinterested in genuinely decarbonising the road transport sector. Instead, the company will use globally significant platforms like the Olympics to brand polluting 100% petrol-powered hybrid cars as green.

Toyota has **far higher** CO₂ emissions than BP – it just has much better branding to **disguise the fact**.





According to P&G's 2022 sustainability report, the company emitted 2 million tonnes of Scope 1 CO_2 emissions, 0.1 million tonnes of Scope 2 CO_2 emissions, and is responsible for 156.9 million tonnes of Scope 3 CO_2 emissions. Its total CO_2 emissions for 2022 amounted to 159.0 million tonnes.

As a part of the global fast-moving consumer goods (FMCG) industry, P&G has significant downstream emissions (mainly relating to consumer use of its products). However, initiatives to mitigate indirect-use emissions are being used to sportswash its image, according to Climate Tracker's 'Climate Transition: Unilever leads; Colgate and P&G lag' <u>report</u> released in August 2023.

Earlier this year, the Science Based Targets initiative (SBTi) also noted that P&G is well on the way to missing its net-zero deadlines. Along with another

P&G is well on the way to missing its net-zero deadlines

Procter & Gamble (P&G) takes the silver medal, earning it second place on the Podium of Polluters

238 companies, the SBTi changed P&G's status on the dashboard it uses to track corporate net-zero goals to "commitment removed", underscoring the difficulty corporations have in defining strategies to meet that goal.

P&G is one of the biggest global marketers of consumer products by revenue, selling roughly USD 82 billion worth in its fiscal year ending June 30, 2023. It spends about USD 8 billion annually on advertising, including sportswashing at major events like the Paris 2024 Olympics.





Samsung takes home the bronze medal, positioning it in third place on the Podium of Polluters

Samsung's 2022 sustainability report shows the company emitted **6** million tonnes of Scope 1 CO_2 emissions, **9.1** million tonnes of Scope 2 CO_2 emissions, and that the company is responsible for **124.7** million tonnes of Scope 3 CO_2 emissions. Its total CO_2 emissions for 2022 amounted to **139.8** million tonnes.

Samsung, renowned for its Galaxy brand, is South Korea's largest semiconductor manufacturer and the country's single biggest consumer of electricity. Despite efforts to promote an eco-friendly image internationally, the company lags far behind its competitors in reducing carbon emissions. Given the enormous and growing electricity consumption of semiconductor companies, with most emissions coming from electricity use, the transition to renewable energy is crucial. Yet, Samsung remains significantly behind in this area.

In March 2021, Samsung announced it had met its 100% renewable energy targets for all its operations in the US, China and Europe. However, this achievement faced significant criticism because over 90% of the company's total electricity consumption occurs in South Korea, primarily powered by coal and gas. As the largest electricity consumer and one of the major emitters in South Korea, Samsung's domestic carbon footprint has grown rapidly over the past decade. Its reluctance to switch to renewable energy sources has led to a significant rise in its domestic greenhouse gas (GHG) emissions, which have surged by 137% in less than a decade. In 2020, the company's GHG emissions (encompassing Scope 1, 2 and 3) were around 30 million tonnes of carbon dioxide equivalent (tCO₂-eq), comparable to Norway's total GHG emissions.

A <u>CDP report</u> indicated that 93% of Samsung's Scope 1 and 2 GHG emissions in 2022 were generated in South Korea, with about 60% (8.94 million tCO_2 -eq) being Scope 2 emissions, or electricity consumption. Despite this, the company only aims to transition its global operations to 100% renewable electricity by 2050.

It was only in September 2022 that Samsung finally committed to using renewable energy usage for all its operations, including South Korean manufacturing facilities. However, the 2050 target appears distant, especially considering that its competitor, Taiwan Semiconductor Manufacturing Company (TSMC), has set a goal to achieve 100% renewable energy usage by 2040, ten years earlier. Furthermore, global think tank New Climate Institute (NCI) has criticised the integrity of Samsung's announcement - its Corporate Climate Responsibility Monitor, published in February 2023, rated Samsung as having "very low integrity". The assessment highlighted the company's failure to publish a complete emissions footprint, lack of clear short-term action plans, and its insufficient disclosure of most Scope 3 emissions.

2015-2022 GHG Emissions (Scope 1+2) of Samsung Electronics in South Korea

Year	GHG Emissions (tCO ₂)	Year-on-year change
2015	6,698,062	
2016	6,897,195	+3%
2017	8,589,517	+25%
2018	10,775,372	+25%
2019	11,143,405	+3%
2020	12,532,779	+12%
2021	14,494,447	+16%
2022	14,922,978	+3%

Source: Greenpeace

A special edition report published in 2024 by NCI also rated Samsung poorly in terms of integrity regarding its renewable energy procurement policy. The company was criticised for lacking any targets for renewable energy procurement within its supply chain, earning a "limited" rating. The report further noted that Samsung's claims of achieving 100% renewable energy in regions outside of South Korea could be misleading, specifically: "Samsung's claims to have completed the transition to renewable electricity in several countries may give a misleading impression on the slow pace of overall progress towards relatively unambitious targets." The NCI report further stated that "Samsung's renewable electricity claims and targets are also undermined by low-quality procurement constructs."

New LNG plants for new fabs?

The South Korean government announced plans in 2023 to develop the world's <u>largest semiconductor</u> <u>cluster</u> in Yongin, Gyeonggi Province. Samsung has committed to investing approximately KRW 360 trillion to build six semiconductor production lines. The government estimates that by the time the industrial complex is completed in 2050, an additional 10 GW of power will be needed. In the short term, it plans to construct new LNG (liquefied

over **90%** of the company's total electricity consumption occurs in South Korea, primarily **powered by coal and gas**

natural gas) power plants to provide the required 3 GW. Samsung, government-affiliated power companies, and the Ministry of Trade, Industry, and Energy have signed an <u>MOU</u>, raising questions about Samsung's commitment to achieving 100% renewable energy by 2050.

Given that Samsung's competitor TSMC has declared its intention to source 100% renewable energy for its newly established semiconductor production lines in Japan, the company's decision to rely on new LNG to meet short-term demand is likely only to become an exercise in increasing its emissions alongside the expansion of its production facilities.

D+ ranking for decarbonisation efforts in 2022

The Greenpeace East Asia report '2023 Supply Change: Climate commitments and renewable energy progress by the world's biggest electronics suppliers' both praised and criticised Samsung. Climate and Energy campaigner Xueying Wu said: "It's encouraging to see that electronics manufacturers are finally recognising the need for climate action, but progress has been uneven and too slow. Unfortunately, emissions from five of the biggest electronics manufacturers, including Samsung Electronics [...] actually increased in 2022. Tech companies boast a lot about going green, but when you look at the bigger picture, you see that their supply chains are extremely dirty. Climate action by Samsung Electronics [...] has been remarkably weak."

The report awarded Samsung a D+ ranking for its decarbonisation efforts in 2022, the lowest of all ranked semiconductor manufacturers. The low grade was given for a variety of reasons, including the lack of a 2030 emissions reduction target, a slow timeline to transition to 100% renewable energy, and heavy reliance on low-impact renewable electricity sourcing methods.

Additionally, although Samsung announced its goal of achieving carbon neutrality and 100% renewable energy use by 2050, it has stopped short of extending that commitment to its supply chain, which is part of its Scope 3 emissions.

Why polluting companies like Toyota, P&G and Samsung partner with the Olympics: corporate social responsibility or corporate social sportswashing?

The Paris 2024 Olympics will see about 15 million people visit the French capital, with an estimated 1 billion people watching the competitions live on TV, and millions following online. Just the opening ceremony will bring more than 500,000 spectators in person to watch athletes from 203 nations sail down the River Seine.

These are precisely the global audiences companies attempt to market products and services to, including decision-makers in various other industries. This captive audience is more likely to believe and act on a marketing campaign endorsed by the IOC, or even linked to the Olympics in any way, than they would outside of the Games. As an aspirational event, the Olympics tug at the hearts and minds of audiences that would

ordinarily be more critical of advertising and marketing messages. Furthermore, they are one of the most high-profile international sports events, coming in second only to the FIFA World Cup, and sponsors like Toyota, P&G and Samsung will use this high-profile platform to showcase both their genuine and their fabricated and harmful sustainability efforts.

By sponsoring the Olympics, Toyota, P&G, Samsung and other polluting companies understand that they purchase a social licence that ensures the public not only accepts their activities, but that they buy into their messaging. The Games are a symbol of community trust and approval, and corporations often take advantage of it.

In pursuit of a better era, devoid of sportswashing

It is difficult to imagine a time when the Olympics were absent of corporate logos and television deals, but the Games were sponsorship-free until Avery Brundage, president of the IOC, retired in 1972.

Brundage believed that involving corporations in the Games would impact the IOC's ability to make independent decisions, and would cloud the games with politics and pressure. Unfortunately, this has proven to be the case on a number of occasions.

The Paris 2024 Olympics will have a lower impact than in previous years, but still a significant one. Indeed, the expected carbon budget is 1.58 million tonnes of CO₂. Transportation accounts for the most significant share of these projected emissions (34%), followed by operations and logistics (26%) and construction (25%). As the mobility partner, Toyota is directly contributing to unnecessarily high levels of transportation emissions.

Special focus on Toyota, the gold medal winner of the Polluters on the **Podium report**

As this year's Olympics draw nearer, Toyota is getting Toyota "is abusing its position as an Olympic partner, its sportswashing machine ready to promote itself, claiming its vehicle fleet for the Games is 100% just as the tobacco industry once did. Research by the electrified." Further noting that "less than half are fully New Weather Institute in 2023 spotlighted Toyota as battery-electric, and most of the rest run on petrol.". a huge sponsor of sports - among the 10 biggest car brands of 2021, it held the most sponsorship deals To further reiterate Toyota's reluctance to transition by an automotive brand globally, including the largest to BEVs, Greenpeace East Asia's annual Auto Ranking number of active sports sponsorship deals overall, placed the manufacturer third from the bottom in its and the highest market share (10.5%). Including both 2023 results, once again noting that: "Unfortunately, past and present deals, at least 23 different sports automaking giants like Toyota aren't reducing their were covered by the carmaker's sponsorship deals. emissions as quickly as many people believe. Industry leaders like Toyota continue to flood the roads with An in-depth Climate Impacts Tracker Asia combustion engine vehicles and a growing number investigation explored the climate-wrecking practices of SUVs. Leading automakers need to accelerate the of companies sponsoring the Paris 2024 Olympics. shift away from fossil fossils, rather than boasting It concluded that, as the sustainable mobility partner, about their minimal EV sales share."

Conclusion – **Cutting Ties With Climate Polluters**

Cutting Ties With Climate Polluters Researchers from Carbon Market Watch have applauded the IOC for its attempts to make the tournament the greenest ever. At the same time, they have noted that making the Games compatible with a 1.5°C world in its current form is "impossible".

One of the recommendations shared by the Badvertising campaign that argues for a tobacco-style ban on high carbon advertising and sponsorship, is for the Olympics to cut ties with climate polluters. Taking sponsorship from companies like Toyota significantly undermines the Olympic Games' on-ground sustainability efforts. Toyota has a climate footprint the size of entire nations, and it misleads the public about the harmful impacts of its activities, while lobbying against vitally needed climate action - all while using the Olympics to sportswash its image.

Olympians, including those competing in Paris, are calling for the Olympics to drop Toyota as a sponsor. They say the company is abusing its position, including by using petrol-fuelled hybrid cars at the so-called fossil fuel free event. If the IOC wishes to gain income from sponsorship it should, at the very least ensure that its sponsorship deals are aligned with its climate and environmental policies, and that it is not putting major polluters on its podium.

The Paris 2024 Olympics will have a lower impact than in previous years, but still a significant one. Indeed, the expected carbon budget is 1.58 million tonnes of CO₂

12

References

- 1 <u>https://global.toyota/pages/global_toyota/sustainability/report/sdb/sdb23_en.pdf</u>, p. 44, 48
- 2 <u>https://www.pginvestor.com/esg/environmental/climate/default.aspx</u>
- 3 <u>https://www.samsung.com/global/sustainability/media/pdf/Samsung_Electronics_Sustainability_</u> <u>Report_2023_ENG.pdf</u>, p.108
- 4 <u>https://www.bridgestone.com/ir/library/integrated_report/2023/assets/pdf/ir2023_spread.pdf</u>, p.109
- 5 <u>https://holdings.panasonic/global/corporate/sustainability/pdf/sdb2023e.pdf</u>, p. 13
- 6 <u>https://www.coca-colacompany.com/content/dam/company/us/en/policies/pdf/sustainability/2022-cdp-climate-response.pdf</u>, p. 25
- 7 <u>https://csrreportbuilder.intel.com/pdfbuilder/pdfs/CSR-2022-23-Full-Report.pdf</u>, p. 71, 72
- 8 <u>https://www.alibabagroup.com/en-US/document-1620276223567462400</u>, p. 31, 32
- 9 <u>https://atos.net/wp-content/uploads/2023/04/atos-2022-universal-registration-document.pdf</u>, p. 177
- 10 <u>https://www.deloitte.com/global/en/about/governance/global-impact-report/global-report-</u> environmental.html, p. 100
- 11 https://usa.visa.com/content/dam/VCOM/regional/na/us/about-visa/documents/2022-environmentalsocial-governance-report.pdf, p. 179
- 12 https://airbnb2020ipo.q4web.com/files/doc_downloads/governance_doc_updated/2023/Airbnb-SustainabilityandCommunityUpdate-2023-111623.pdf, p. 38
- 13 <u>https://mengniuir.com/pdf/esg/esg2022_en.pdf</u>, p. 169
- 14 <u>https://www.allianz.com/content/dam/onemarketing/azcom/Allianz_com/sustainability/documents/</u> <u>Allianz_Group_Sustainability_Report_2023-web.pdf</u>, p. 61



2



